

Contents

Preface

vii

Acknowledgements

xi

Exercises

1. Maintenance and culturing of <i>Drosophila</i>	1
2. Sexing and collection of virgin females	9
3. To study the life cycle of <i>Drosophila melanogaster</i>	17
4. To study mutant phenotypes of <i>Drosophila melanogaster</i>	23
5. To demonstrate Mendel's law of segregation	35
6. To demonstrate Mendel's law of independent assortment	43
7. To study the inheritance of white eye colour in <i>Drosophila</i>	53
8. To map sepia and curled mutants by recombination mapping	61
9. To demonstrate absence of crossingover in <i>Drosophila</i> males	69
10. To establish dominance relationship between multiple alleles of a gene	77
11. To demonstrate that the white-eyed flies have a deposition defect	85
12. To perform cis-trans test of allelism with the given eye colour mutants	91
13. To demonstrate dosage compensation in <i>Drosophila melanogaster</i>	99
14. To create a Bar and apricot eyed double mutant	109
15. To detect recessive lethal alleles in genetic crosses	119
16. To study the penetrance and expressivity of serrate and vestigial wings in <i>Drosophila melanogaster</i>	127
17. To study the characteristics of X-linked dominant traits	135
18. To separate eye pigments (pterins) by thin layer chromatography	145
19. To prepare stained squashes of salivary glands showing well spread polytene chromosomes	153
20. To demonstrate recombination within a gene	161

21. To determine the inheritance pattern of white eye colour and vestigial wings from the F_2 data	169
22. To dissect the Malpighian tubules, brain and imaginal discs from the third instar <i>Drosophila</i> larva	177
23. To analyse using bioinformatic tools <i>Drosophila</i> as a model system for human diseases (<i>Toll-9</i> gene for asthma)	184
24. To test PTC tasting ability in a random population and to calculate allele and genotype frequency using Hardy Weinberg law	197
25. To determine the ABO blood groups in a random sample and calculate the allele frequency using Hardy Weinberg law	207
Appendix I: Other Food Recipes	219
Appendix II: Chi-square Values and Probability	221